



Mt. Tom Station
200 Northampton Street
Holyoke, MA 01040
Ph: (413) 536-9562
Fax: (413) 536-9513
Email: howard.person@gdfsuezna.com

Howard Person
Plant Manager

February 27, 2013

PRMT0004g

Mr. George Papadopoulos
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mailcode OEP 06-1
Boston, MA 02109-3912

Reference: NPDES Permit No. MA0005339, State Permit No. 278
 Mount Tom Station, Holyoke Water Power Company,
 Issued September 18, 1992 (C04767).

Dear George:

Mount Tom Station
Responses to Conference Call of January 11, 2013
Plus Email questions of 2-1-2013

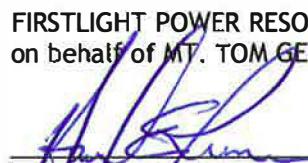
FirstLight Power Resources Services, LLC on behalf of Mt. Tom Generating Company, LLC (Mt. Tom) offers this as response to some questions raised during our conference call of January 11, 2013.

Our requests and/or responses to questions are in the following pages of this letter or referred to in attachments to this letter. If there are any points that you feel we have missed, please let me know.

You can direct any questions regarding this submittal to James Merchant, jmerchant@gdfsuezna.com, or at 413-536-9531 or call me at Mt. Tom Station.

Very truly yours,

FIRSTLIGHT POWER RESOURCES SERVICES, LLC
on behalf of MT. TOM GENERATING COMPANY, LLC


Howard Person

Enclosures

cc: MA DEP - Western Regional Office, 436 Dwight Street, Springfield, MA 01103



www.tighebond.com

171318-01-01
 November 17, 2008

Sharon Demeo
 US Environmental Protection Agency - Region 1
 1 Congress Street Suite 1100
 Mail Code: CMP
 Boston, MA 02114-2023

91 7108 2133 3935 6524 8004

David Howland, Regional Engineer
 Saadi Motamed
 Massachusetts Department of Environmental Protection
 436 Dwight Street
 Springfield, MA 01103

91 7108 2133 3935 6517 2521

91 7108 2133 3935 6517 2514

**Re: Mt. Tom Generating Company, LLC
 Mt. Tom Station
 NPDES Permit MA0005339
 Supplemental Information
 Permit Renewal Application Date June 10, 1997**

Dear Ms. Demeo:

On behalf of Mt. Tom Generating Company, LLC (Mt. Tom), we are providing supplemental information to the NPDES Permit Renewal Application previously submitted June 10, 1997. The supplemental information primarily addresses redirection of currently permitted discharge flows from one outfall to another. No modifications to existing discharge permit limitations are needed with respect to the supplemental information contained herein.

Mt. Tom Generating Company, LLC is currently under Administrative Consent Order with the Massachusetts Department of Environmental Protection to complete construction of air emission controls for emissions of mercury and sulfur dioxide from the Mt. Tom Station by October 2009. This includes construction of a Turbosorp System which uses dry hydrated lime to facilitate the removal of mercury and ash from the air emissions associated with coal combustion. The attached drawings provide an isometric view of the new Turbosorp equipment and an overview of proposed stormwater and wastewater piping modifications for the Turbosorp system. Mt. Tom requests that EPA review this submittal to confirm that no NPDES permit modifications are needed for the plant modifications to allow full compliance in accomplishing these important environmental improvements.

The installation of the Turbosorp system will have minor impacts to the NPDES permitted stormwater and process wastewater discharges from the site. The changes in projected flows are minimal compared to currently permitted discharge volumes and review of current actual flow rates indicates that no modifications to discharge limits are required. Therefore, Mt. Tom is submitting this as supplemental information to EPA in association with the permit renewal application already on file, rather than as a permit modification request.

The construction of the Turbosorp system will result in the need to redirect a portion of stormwater flows to different existing NPDES permitted discharge outfalls at the Mt. Tom Power Facility. There will be no new or modified outfall structures required and minimal net increase in combined stormwater/process wastewater discharges. The changes simply reflect modifications to site drainage patterns required to address the grading needed for construction of the Turbosorp system, collection and treatment of stormwater that has the



potential to come into contact with residuals, and collection and discharge of stormwater from roof drains.

In association with redirecting portions of stormwater flows, there will be a minor increase in process wastewater associated with the collection and treatment of stormwater that may have the potential to come into contact with trace amounts of ash solids and/or lime collected on the proposed ash silo truck loading apron and Turbosorp unit drains. A summary of proposed handling of water from all new drains is provided below. The capacity of the treatment facility itself is believed to be more than adequate to handle the increased flow and no modification of the treatment system itself is planned.

The Mt. Tom Station operates under an Individual NPDES permit covering both process wastewater and stormwater discharges. However, in preparing this submittal, the newly released Multi-sector General Permit (MSGs) permit requirements have also been reviewed to assure that the Individual Permit meets the intent of these regulations. No provisions of the new MSGs rules have been identified as being in conflict with requirements of the Individual NPDES Permit for the Mt. Tom Station.

Drain Discharge Summary

Rainfall data used in the following summaries is based on a 10-year storm of 4.5 inches per day and a 90th percentile monthly maximum precipitation of 7.68 inches per month. For ease of calculating these volumes, the 4.5 inch storm would contribute 2813 gallons per 1000-square feet of collection area per day. Similarly the 7.68 inches would contribute a monthly average of 160 gallons per 1000-square feet of collection area per day.

Wash water to be used at the Turbosorp and ash silo for equipment and general cleanup is estimated to be a 10 gpm rate for 30 minutes approximately four times per month at each location. This constitutes only 2400 gallons per month added to the drain discharges from the areas listed below.

TurboSorp Unit Drains

The Turbosorp unit includes a drain for periodic cleanup operations and rainfall runoff. Because there is the potential for the wash water and rain water to contain some contaminants, the drain will be piped to the existing sump (adjacent to the existing ash silos) and discharged for treatment in the facility's wastewater treatment plant (WWTP) which include polymer addition and plate settling equipment with pH neutralization prior to discharge to the Connecticut River via existing Outfall 002. The apron area of the Turbosorp is 1400 square feet yielding a maximum daily storm flow of 3938 gallons (see above for calculations). Wash water would only contribute an average of 40 gallons per day. These flows would be small enough not to require an increase in facility discharge flow limits. (Refer to Outfall Modification Summary below.)

Ash Silo Drains

A truck loading apron is being constructed to collect all precipitation. Additionally wash water, a safety shower and other minor drains will be collected in the vicinity of the ash silo loading conveyors. This flow may contain some ash residuals as well as periodic wash down water from the pug mill. Wastewater from this area will be directed to the existing WWTP. Stormwater from the apron area is currently discharged via Outfall 004 and will now be diverted to the WWTP and Outfall 002. The apron area of the Ash Silo is 3470 square feet yielding a maximum daily storm flow of 9760 gallons (see above for calculations). Wash



water would only contribute an average of 40 gallons per day. These flows would also be small enough not to require an increase in facility discharge flow limits. (Refer to Outfall Modification Summary below.)

Lime Silo Drains

A safety shower will be provided for the Lime Silo area. The safety shower area will be separately bermed from the Lime Silo. The safety showers will be supplied with potable water and will need to be tested on a routine basis to ensure proper operation. Discharge of potable water from this activity can be safely directed to the existing stormwater Outfall 004.

A truck loading apron will also be constructed to collect all precipitation that falls onto the lime silo loading area and may potentially contain some lime residuals. Wastewater from this area will be diverted to the existing WWTP. Stormwater from this area is currently discharged via Outfall 004 and will now be diverted to the WWTP and Outfall 002. The apron area of the Lime Silo is 1950 square feet yielding a maximum daily storm flow of 5485 gallons (see above for calculations). (Refer to Outfall Modification Summary below.)

Baghouse Roof Drain

The baghouse roof will have no external vents or other industrial activity that would be a potential source of contaminants. Therefore, stormwater from the roof drains will be diverted to Outfall 007 whereas it currently drains naturally to Outfall 004, both stormwater drainage outfalls. Based on a roof area of 5,250 square feet, the estimated maximum storm runoff would be 14,766 gallons per day.

Booster Fan Area Drains

Stormwater drainage from the Booster Fan area will have a potential for contact with small amounts of oil and grease. Stormwater from this area will be collected and treated for oil and grease removal using a Highland Tank oil-water separator, design information attached. After treatment the stormwater will be discharged to the currently permitted stormwater runoff Outfall 007. This area currently discharges to Outfall 007. Based on a surface area of 2240 sq.ft., the estimated maximum storm runoff would be 6300 gallons per day.

Form 1 - General Information

An updated and signed Form 1 is attached. Updated information includes changes to the facility Mailing address, name of the permittee, and official providing certification of the NPDES Permit Renewal Application with supplemental information.

Updated information for the Facility Mailing Address is as follows:

Mt. Tom Generating Company, LLC
c/o FirstLight Power Resources, LLC
20 Church Street, 16th Floor
Hartford, CT 06103
Attn: John Campbell, Senior Vice President – Asset Operations

Please note that since the time of the permit renewal application, the permit has been transferred to Mt. Tom Generating Company, LLC, as indicated in the attached documentation. Please also note correction to facility street address.



Outfall Modification Summary

As a summary, the modifications for each of the site outfalls are proposed:

Outfall 001 Once through cooling water No changes

Outfall 002 Wastewater treatment system

	Precipitation Redirected flow:		Wash water drain additions:	
	Daily Max.	Mo. Avg.	Daily Max.	Mo. Avg.
Turbosorp Unit Drains	3938	224	300	40
Ash Silo Drains	9760	555	300	40
Lime Silo Drains	5485	312		
Column Totals:	19183	1091	600	80
Grand total maximum daily addition to DSN002:				19783
Total increment to peak monthly daily average:				1171

Compare against max. daily flow limit of 360,000 and monthly average of 216,000.

Outfall 003 Stormwater No changes

Outfall 004 Stormwater Redirect portion of flow from Outfall 004 to 002 and 007

Outfall 005 Traveling Screen Wash No changes

Outfall 006 Reflecting Pool Overflow No changes

Outfall 007 Oil Trap Overflow/Highway Runoff Redirect portion of flow from Outfall 004 to 007

Outfall 008 Bottom ash pond No NPDES changes

Outfall 009 Bottom ash pond No NPDES changes

Outfall 010 Fly ash pond No NPDES changes

Outfall 011 Fly ash pond No NPDES changes

(Note: Some flows shown above are redirected stormwater flows to incorporate treatment at the WWTP for potential contaminants. Net additions of water volume for entire plan site is made up of wash water for the new Turbosorp areas and safety shower runoff and would be less than 1000 gallons per month.)

Specific modifications to information previously provided in the June 10, 1997 NPDES Permit Renewal Application is detailed below.



Form 2C

Form 2C provides information for estimated flows to the wastewater treatment system. A small portion of stormwater flows currently discharged via Outfall 004 will be redirected to the wastewater treatment system and Outfall 002. The total increase to Outfall 002 estimated at 19,783 gpd max day and 1,171 gpd peak monthly average. These values are well below the permitted discharge limits of 360,000 gpd and 216,000 gpd for maximum daily and average monthly flow, respectively. No permit modification is requested.

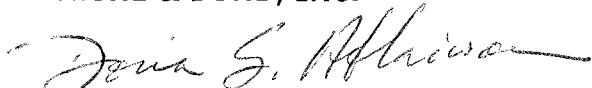
Form 2F

Modifications to permittee information as previously addressed only.

On behalf of Mount Tom Generating Company, we would be happy to discuss any questions you may have regarding the proposed modifications. In order to finalize facility design for this project, we would appreciate review of this submittal within 30 days to address any modifications needed. You can reach me by phone at (413) 875-1314 or by e-mail at DSAtkinson@TigheBond.com.

Very truly yours,

TIGHE & BOND, INC.



Doris S. Atkinson, P.E.
Senior Project Manager

Enclosures

Copy: John Campbell (w/encl)
Jim Merchant (w/ encl)
Dick Merchant (w/ encl)
Wally Ebner (w/ encl)
John Murray (w/out encl)

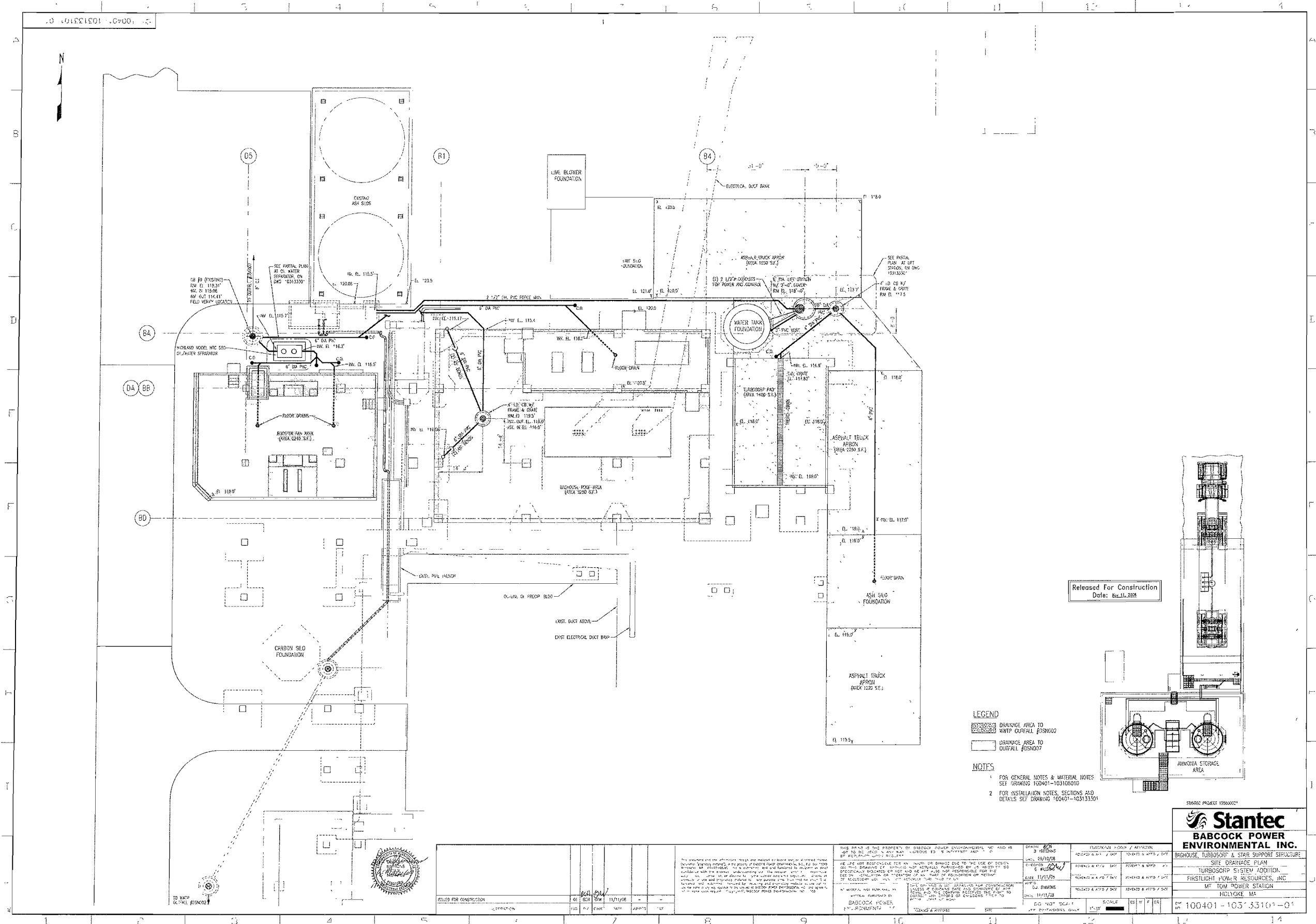
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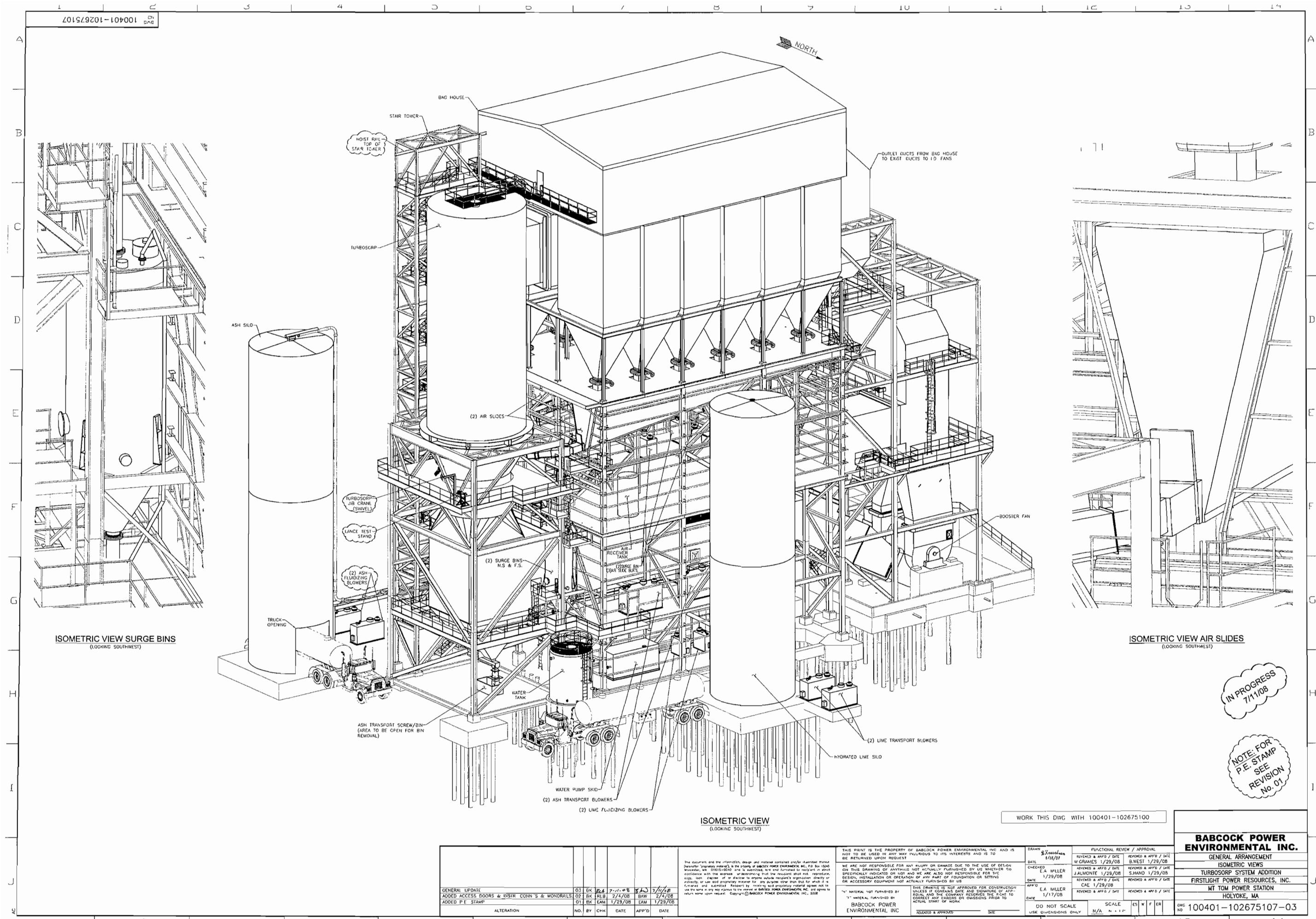


FORM 1 GENERAL	U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION <i>Consolidated Permits Program</i> <i>(Read the "General Instructions" before starting.)</i>			I. EPA I.D. NUMBER <table border="1"> <tr> <td>S</td> <td colspan="2"></td> <td>T/A</td> <td>C</td> </tr> <tr> <td>F</td> <td colspan="2">MAD000846105</td> <td></td> <td>D</td> </tr> <tr> <td>1</td> <td>2</td> <td></td> <td>13</td> <td>14</td> </tr> <tr> <td></td> <td></td> <td></td> <td>15</td> <td></td> </tr> </table>	S			T/A	C	F	MAD000846105			D	1	2		13	14				15	
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LABEL ITEMS		MAD000846105 Mount Tom Station Mount Tom Generating Company, LLC PLEASE PLACE LABEL IN THIS SPACE c/o FirstLight Power Resources Services, LLC 20 Church Street, 16th Floor, Hartford, CT 06103 200 Northampton Street, Holyoke, MA 01040																						
II. POLLUTANT CHARACTERISTICS		GENERAL INSTRUCTIONS If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (<i>the area to the left of the label space lists the information that should appear</i>), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.																						
INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms .																								
SPECIFIC QUESTIONS		Mark "X"																						
		YES	NO	FORM ATTACHED	Mark "X"																			
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S. ? (FORM 2A)		<input checked="" type="checkbox"/> 16 17 18	B. Does or will this facility (<i>either existing or proposed</i>) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S. ? (FORM 2B)			<input checked="" type="checkbox"/> 19 20 21																		
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)			<input checked="" type="checkbox"/> 22 23 24	D. Is this a proposed facility (<i>other than those described in A or B above</i>) which will result in a discharge to waters of the U.S. ? (FORM 2D)			<input checked="" type="checkbox"/> 25 26 27																	
E. Does or will this facility treat, store, or dispose of hazardous wastes ? (FORM 3)		<input checked="" type="checkbox"/> 28 29 30	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)			<input checked="" type="checkbox"/> 31 32 33																		
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)			<input checked="" type="checkbox"/> 34 35 36	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)			<input checked="" type="checkbox"/> 37 38 39																	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		<input checked="" type="checkbox"/> 40 41 42	J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area ? (FORM 5)			<input checked="" type="checkbox"/> 43 44 45																		
III. NAME OF FACILITY																								
c 1	SKIP	Mount Tom Station																						
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IV. FACILITY CONTACT																								
A. NAME & TITLE (<i>last, first, & title</i>)				B. PHONE (<i>area code & no.</i>)																				
c 2	Murray, John S., Station Manager			(413) 536-9562																				
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V. FACILTY MAILING ADDRESS																								
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VI. FACILITY LOCATION																								
A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER																								
c 5	200 Northampton Street																							
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B. COUNTY NAME																								
Hamden																								
46				70																				
C. CITY OR TOWN				D. STATE	E. ZIP CODE	F. COUNTY CODE (<i>if known</i>)																		
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<p>Electrical Generation generated from steam produced by the combustion of fossil fuel.</p>																																																																																																											
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<p>I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.</p>																																																																																																											
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Highland Series G Oil/Water Separators

UL-SU-2215 Approved



Highland Tank

Model HT or HTC	Total Volume Gallons	Total Spill Capacity Gallons	Inlet/ Outlet Diameter	Flow Rate gpm	Dimensions Diameter	Length	Approx. Wt.* (lbs.)
**350	350	175	4"	35	3'6"	9'0"	2,781
550	550	275	4"	55	3'6"	10'9"	3,041
1,000	1,000	500	6"	100	4'0"	14'0"	4,441
2,000	2,000	1,000	6"	200	5'4"	15'0"	6,556
3,000	3,000	1,500	8"	300	5'4"	21'4"	7,936
4,000	4,000	2,000	8"	400	5'4"	28'8"	9,079
5,000	5,000	2,500	8"	500	6'0"	28'8"	10,335
6,000	6,000	3,000	10"	600	6'0"	34'0"	11,718
7,000	7,000	3,500	10"	700	7'0"	28'8"	14,387
8,000	8,000	4,000	10"	800	7'0"	33'6"	16,118
9,000	9,000	4,500	12"	900	8'0"	28'8"	16,862
10,000	10,000	5,000	12"	1,000	8'0"	32'0"	18,226
12,000	12,000	6,000	12"	1,200	8'0"	38'9"	20,990
15,000	15,000	7,500	14"	1,500	10'0"	32'8"	29,445
20,000	20,000	10,000	16"	2,000	10'6"	38'9"	36,000
25,000	25,000	12,500	18"	2,500	10'6"	46'6"	45,920
30,000	30,000	15,000	20"	3,000	10'6"	56'0"	53,399
40,000	40,000	20,000	24"	4,000	12'0"	56'9"	65,148

*Weights shown are for Model HTC Single-wall Separators. Contact Highland for all other weights. Plate spacing and orientation may vary depending on site conditions.

** One access manway in separations chamber, initialized initialized

Series G Oil/Water Separators

Series G Oil/Water Separators feature an integral sand compartment to permit sand and grit to settle out of the wastewater before entering the oil/water separator

Highland Oil/Water Separators are used specifically for the removal of free floating oil, grease, and settleable oily coated solids from oil/water discharges associated with many types of industrial facilities.

Designed to remove oils with a specific gravity less than .95, high performance separators from 15 ppm oil/grease discharge (Model HT) down to 10 ppm discharge (Model HTC) are available.

All separators are of the highest quality — constructed to American Petroleum Institute (API), Underwriters Laboratories (UL), and Steel Tank Institute (STI) ACT-100-U® or STI-P3® specifications.

Patents and approvals:

U.S. Patent # 4,722,800

Canadian Patent # 1,296,263

City of New York, Board of Standards and Appeals
Under Calendar Number 1215-88-SA

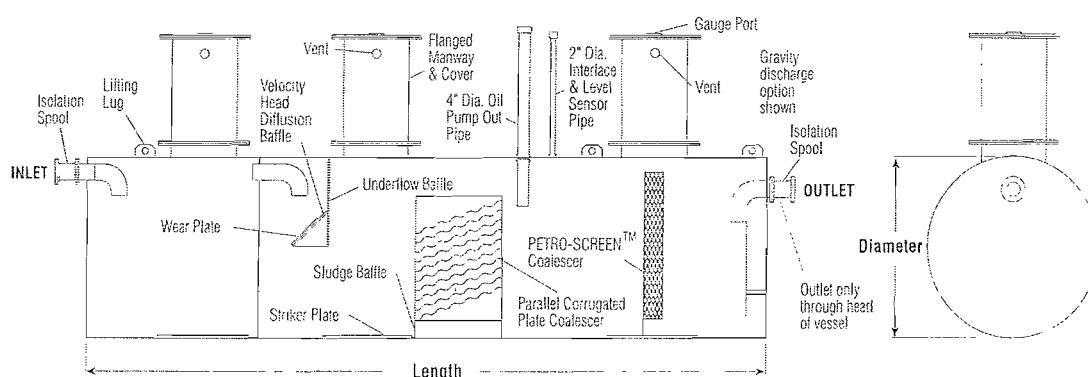
Massachusetts Board of State Examiners of Plumber
and Gas Fitters Approval Code P1-0594-25

Passed DIN Parts 4 & 5; DIN 38-409 Part 18

Testing and Analysis

General Arrangement

Model HTC
ACT-100-U®
Single-wall shown



Recommended Guideline Specifications

Series G Combination Sand and Oil/Water Separator

Provide and install _____ Highland Tank Underground Model C-_____ Series G UL-SU-2215 Listed, Double-wall Type I, Parallel Corrugated Plate, Gravity Displacement, Combination sand and Oil/Water Separator. Separator(s) shall be furnished with oil level alarm and leak detection systems. combination Sand and Oil/Water Separator shall be _____ diameter x _____ long, having a total volume of _____ gallons. A Separator of smaller volume is not permissible.

Application

The separator shall be designed for gravity separation of sand, grit, settleable solids, or semisolids and free oils (hydrocarbons and other petroleum products) along with some settleable solids from wastewater. The source of the influent to the separator shall be gravity flow from stormwater runoff, hydrocarbon spills, and/or cleaning/maintenance operations.

Performance

The separator shall be listed to Underwriter's Laboratories UL-SU-2215. Provide certification documentation showing criteria under which the system was tested. The separator shall also be evaluated and tested in accordance with DIN 1999. Certification for DIN 1999 shall also be provided.

Influent Characteristics

The separator shall be designed for intermittent and variable flows of water, oil, or any combination of non-emulsified oil/water mixtures ranging from zero to _____ the unit's rated GPM flow. Operating temperatures of the influent oil in water mixture shall range from 40°F to 120° F. The specific gravity of the oils at operating temperatures shall range from 0.68 to 0.95. The specific gravity of the fresh water at operating temperatures shall range from 1.00 to 1.03.

Effluent Characteristics

The free oil and grease concentration in the effluent from the separator shall not exceed 10 mg/l (10 ppm). To achieve this goal, it will be necessary to remove all free oil droplets equal to and greater than 20 microns.

Design Criteria

Construction and performance certification of the separator shall be in strict accordance with Underwriter's Laboratories Subject 2215. Separator shall bear the UL-SU-2215 label.

Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges; Design and Operation of Oil/Water Separators"

Oil/water separator construction shall comply with requirements of National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 1996 Edition.

Separator shall be cylindrical, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. Separator capacities, dimensions, construction, and thickness shall be in strict accordance with Underwriters Laboratories Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquid, Type I Double-wall construction with 360° steel secondary containment. The inner steel tank shall be completely contained within the outer steel tank, enclosing 100% of the tank's volume. The UL-58 Type I constructed tank must have a double steel shell with a space between the layers. The space

between the inner and outer steel walls shall be monitored for leaks with an approved electronic leak detection device.

The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions.

Separator Corrosion Control System shall be in strict accordance with ACT-100-U® specifications as applied by a licensee of the Steel Tank Institute (STI). Manufacturer must be a licensee of STI. No assigning or subcontracting of STI licensing shall be permitted.

Separator shall be the standard product of a steel tank manufacturer regularly engaged in the production of such equipment, having at least 5 years experience in manufacturing similar units for identical applications.

Separator shall be fabricated, inspected, and tested for leakage before shipment from the factory by manufacturer as a completely assembled vessel ready for installation.

Separator shall have an oil storage capacity equal to about 43% of the total vessel volume and an emergency oil spill capacity equal to 80% of the total vessel volume.

General Description

Separator shall be a standard prepackaged, pre-engineered ready to install unit consisting of:

An influent connection _____ inch, flanged.

An internal influent nozzle at the inlet end of the separator, located at the furthest diagonal point from the effluent discharge opening.

A velocity head diffusion baffle at the inlet end that:

- Reduces horizontal velocity and flow turbulence
- Distributes the flow evenly over the separator's cross sectional area.
- Directs the flow in a serpentine path to enhance hydraulic characteristics and fully utilize entire separator volume.
- Completely isolates all inlet turbulence from the separation chamber

A sediment chamber to disperse flow and collect oily solids and sediments.

A sludge baffle to retain settleable solids and sediment to prevent them from entering the separation chamber.

An Oil/Water Separation Chamber containing an inclined plate coalescer with removable, corrugated, protected plates, sloped toward the sediment chamber that:

- Shortens the vertical distance an oil globule has to rise for effective removal.
- Enhances coalescence by generating a slight sinusoidal (wave like) flow pattern causing smaller, slow rising, oil globules to coalesce together on the undersides of the plates forming larger, rapidly rising sheets of oil.
- Directs the paths of the separated oil to the surface of the separator.

A sectionized removable "PETRO-SCREEN™" polypropylene impingement coalescer designed to intercept oil globules of 20 microns in diameter and larger.

An internal effluent downcomer at the outlet end of the separator, to allow for discharge from the bottom of the separation chamber only.

An effluent pump connection _____ inch, flanged.

Fittings for vent, interface/level sensor, leak detection, and waste oil pump-out, sampling, and gauge.

Two (2) _____ diameter manholes, U.L. approved, complete with _____ extension, cover, gasket, and bolts. One manway shall be placed between the transfer pipe and the parallel corrugated plate coalescer to facilitate access into the sediment chamber for solids removal from above. One manway shall be placed between the parallel corrugated plate coalescer and outlet to facilitate access into the oil/water separation chamber for coalescer maintenance/removal and oil removal.

Lifting lugs at balancing points for handling and installation.

Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.

Corrosion Protection System consisting of:

- Isolation spool pieces
- Dielectric isolation gaskets and bushings
- External surfaces commercial blast, coated 70 mils DFT polyurethane coating (ATC-100-U®)
- 30-year Limited Warranty

Internal surfaces commercial blast, coated 10 mils DFT polyurethane.

Accessories and Options

An audible and visual oil level and leak detection alarm system with silence control

Dielectric hold down straps with turnbuckles.

Consult Highland Tank for:

- "EZ-Access" Option: Separator furnished with large rectangular accessway with removable coalescers to allow for total, unconfined, unrestricted, OSHA recommended top access for observation and maintenance
- Special coatings (interior or exterior)
- Integral sand, oil or effluent compartments
- Level controls and automatic pump-out systems
- Heating systems, electric or steam
- Internal ladders
- Storage tanks and accessories
- STI-P3® corrosion protection system

Please visit us at www.hightank.com.



One Highland Road
Stoystown, PA 15563
814-893-5701
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99 West Elizabethtown Road
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FAX 273-1365

2700 Patterson Street
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2225 Chestnut Street
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717-664-0602
FAX 664-0631

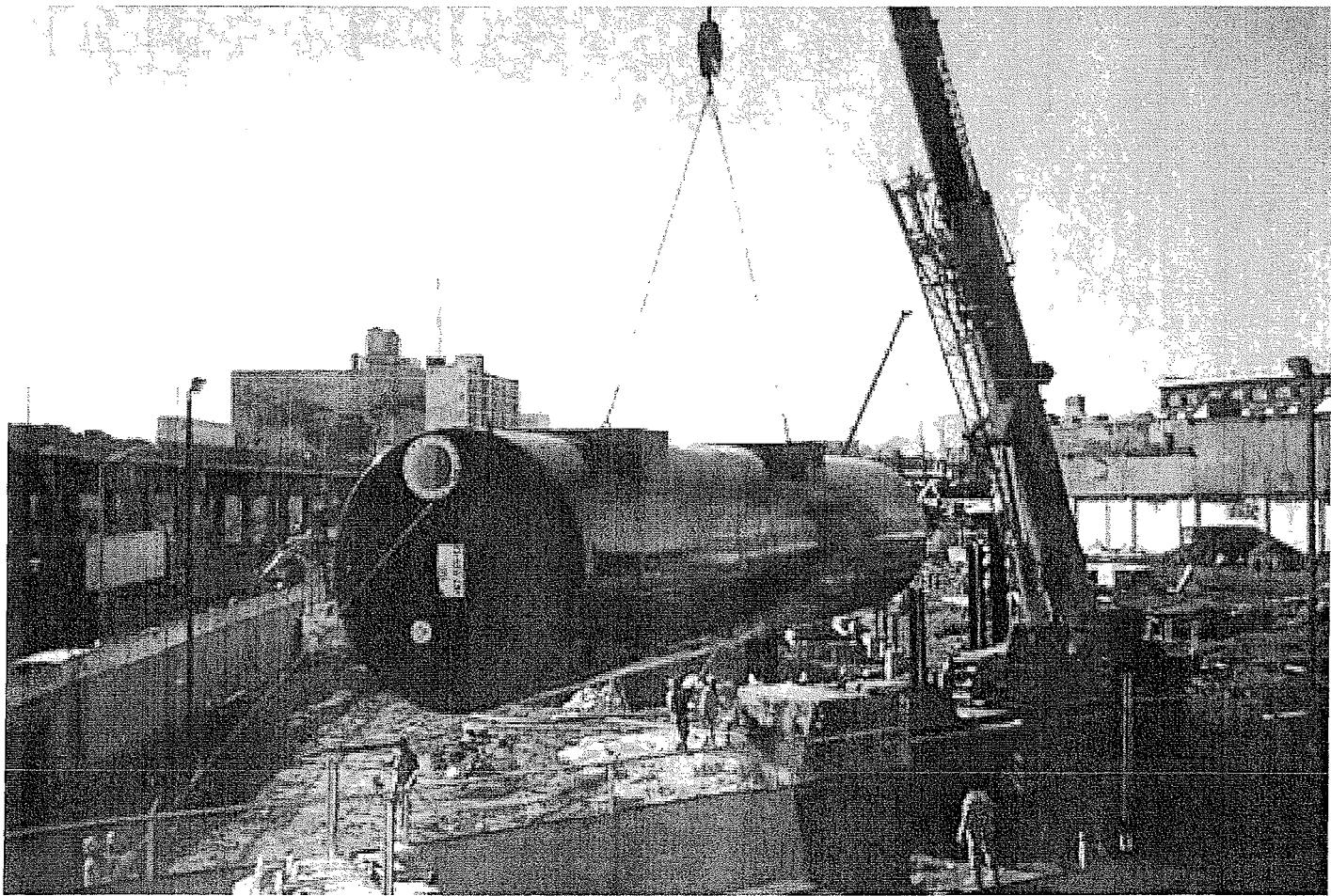
1510 Stoystown Road
Friedens, PA 15541
814-443-6800
FAX 444-8662

Cylindrical Oil/Water Separators

Available with a UL-SU2215 Construction & Performance Label



Highland Tank®



Cylindrical Design

Highland Oil/Water Separators are used specifically for the removal of free floating oil, grease, and settleable oily coated solids from oil/water discharges associated with many types of petroleum, industrial, commercial, military, and municipal facilities.

Highland's separators help these facilities comply with the EPA's regulations for the proper treatment and discharge of contaminated storm water runoff. They also help these facilities satisfy their SPCC requirements for spill control and secondary containment.

Designed to remove oils with a specific gravity less than .95, high performance separators from 15 ppm oil/grease discharge (Model HT) down to 10 ppm discharge (Model HTC) are available.

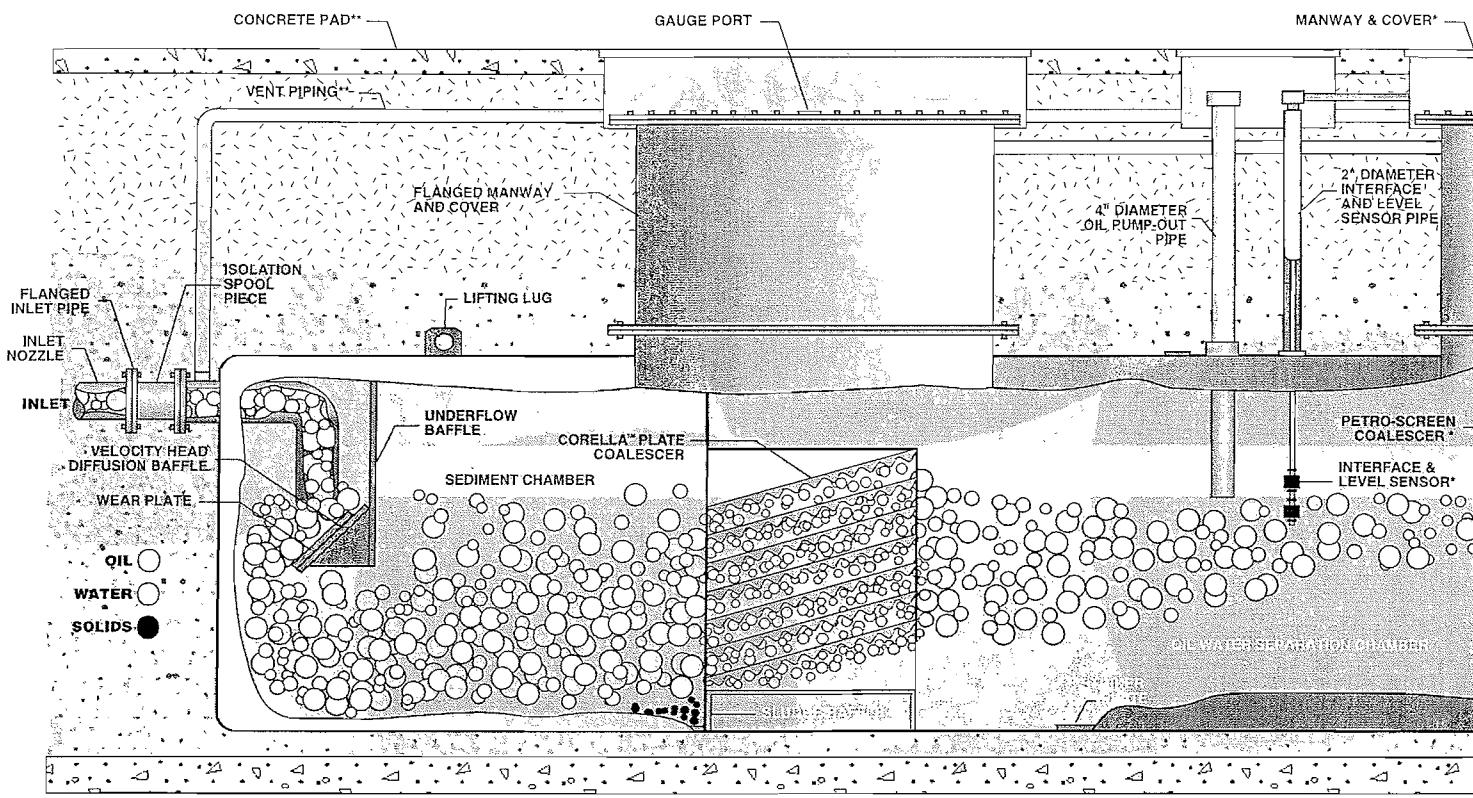
All Highland separators are equipped with Corella® inclined parallel plate coalescers that combines the features of both a flat plate coalescer and a corrugated plate coalescer into a new "self-cleaning" design that performs better than traditional plate separators.

Utilizing Highland's EZ Access manways, inspection of the Corella® is easy, without a dangerous confined space entry.

Highland separators are of the highest quality — constructed to American Petroleum Institute (API) and Underwriters Laboratories Inc. (UL) specifications.

Highland oil/water separators come in a variety of designs and are available in single-walled or double-walled construction for aboveground or underground installation.

How It Works . . .



* Optional equipment available from Highland Tank

** Installer supplied equipment

UL-SU2215 Listed Model HTC Oil/Water Separator with EZ-Access Option shown

HIGHLAND'S PATENTED DESIGN

Highland patented oil/water separators are stationary wastewater treatment vessels, filled with water. They contain specially designed internal baffles and coalescers to accelerate the separation process. The vessel is designed for unconfined access from above for inspection and maintenance.

Inlet flow is directed against the velocity head diffusion baffle to reduce flow turbulence and to distribute the flow evenly over the separator's cross sectional area. In the sediment chamber, heavy solids settle out and concentrated oil rises to the surface.

The oily water then passes through the Corella® Coalescer, an inclined arrangement of stacked parallel flat and corrugated plates.

The corrugated underside of the Corella® plates causes the oil to coalesce into sheets. The oil globules then rise to the surface of the separation chamber, where the separated oil accumulates.

Any remaining solids sink to the top of the plates and slide off of the plates to the solids collection area. The effluent flows downward to the outlet and is discharged by gravity displacement.

To intercept droplets of oil too minute to be removed by the parallel flat/corrugated plates, we use a Petro-Screen polypropylene impingement coalescer (an encased bundle of layered oil-attracting fibers). Large EZ-Access chambers allow for total, unconfined, unrestricted access from above to the removable Corella® and Petro-Screen coalescers for safe visual inspection, cleaning, and maintenance.

Electronic oil level controls sound an alarm at high oil levels so that waste oil can be removed from the separator. Double-walled separators are monitored with electronic leak detection systems for the interstitial space.

Patents and approvals:

Underwriters Laboratories, Inc. UL-SU2215

U.S. Patent Numbers:

4,722,800, 5,520,825 & 6,605,224

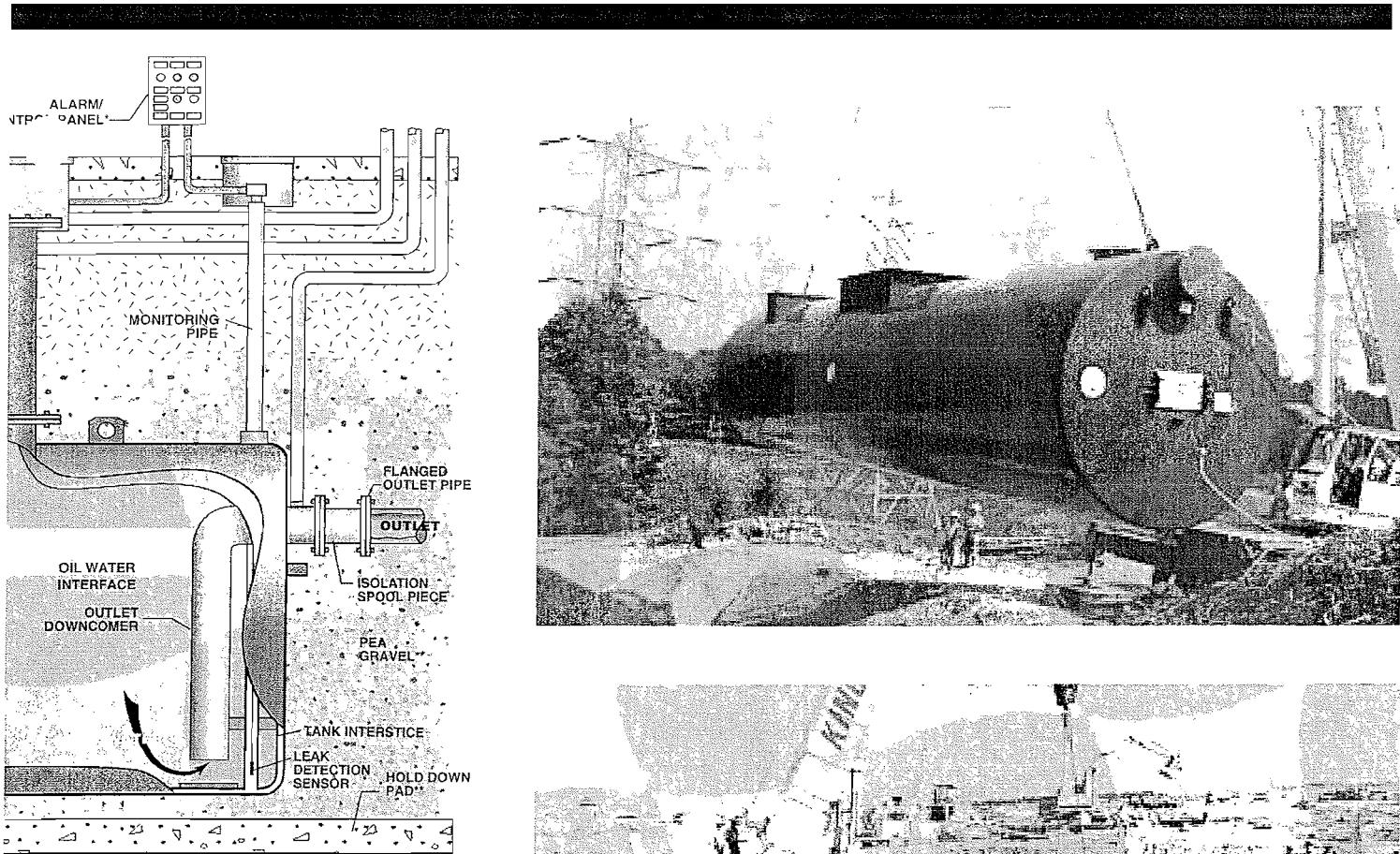
Canadian Patent Numbers:

1,296,263, 1,325,179 & 2,389,065

City of New York, Board of Standards and Appeals Under Calendar Number 1215-88-SA
Massachusetts Board of State Examiners of Plumber and Gas Fitters

Approval Code P1-0594-25

Evaluated to DIN Parts 4 & 5; DIN 38-409 Part 18

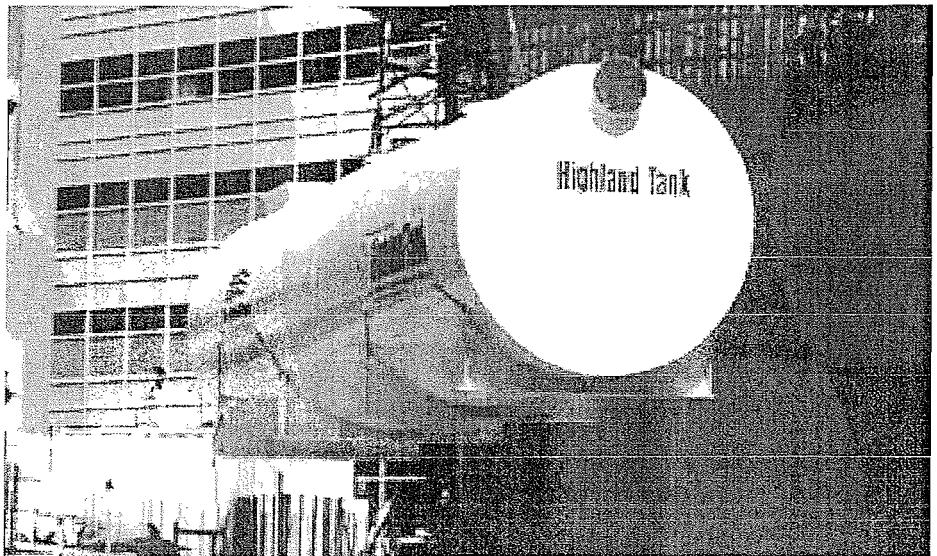
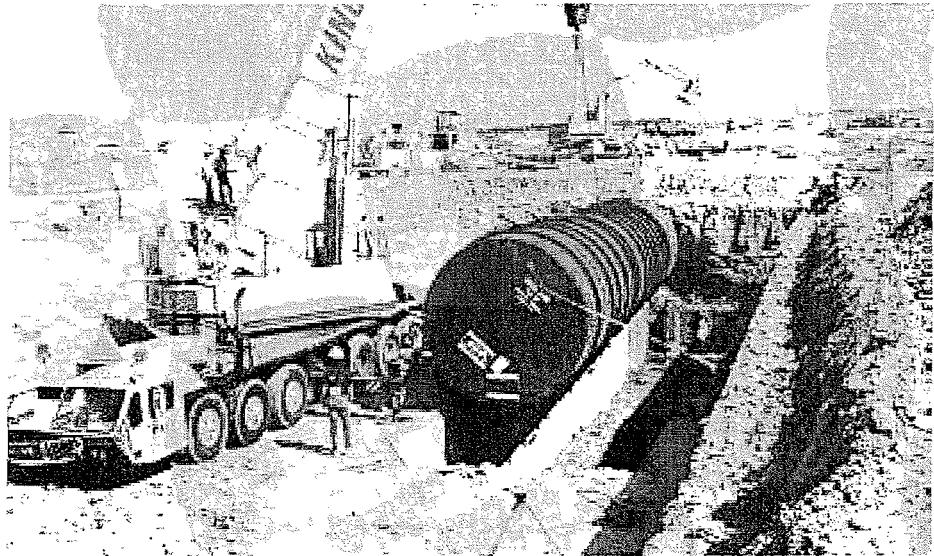


HighGuard Protection System

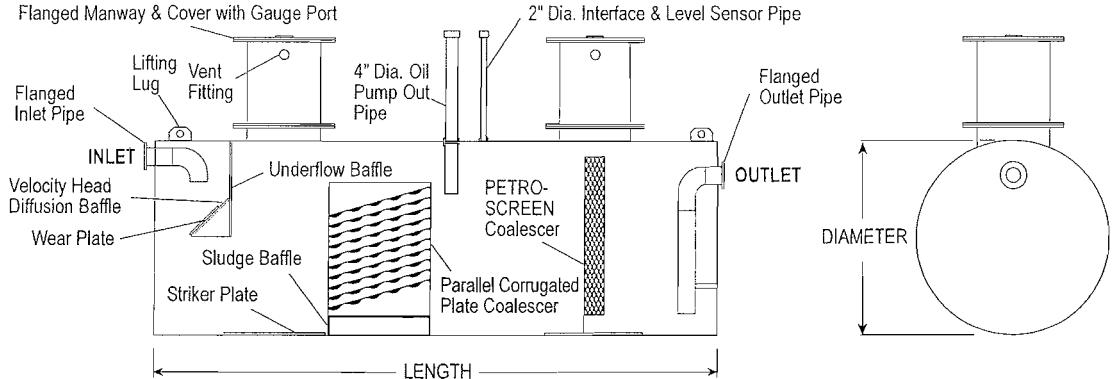
Highland's HighGuard protection systems combines the structural strength of steel separator construction and the lasting protection of a polyurethane coating to produce a high-quality oil/water separator second to none!

The HighGuard protective coating is a solvent-free, tar-free, two component polyurethane coating system that will provide permanent and effective corrosion protection for the effective life of the separator. The very short reaction time of the HighGuard coating allows it to be spray applied with special plural component equipment that ensures an even application over the entire surface of the separator.

HighGuard's 75 mil coating is extremely resistant to surface damage due to impact or abrasion that may occur during transportation and installation. All HighGuard separators are commercially grit-blasted with steel grit to thoroughly clean and prepare the exterior surfaces for coating. This process leaves the separator with a rough-to-the-touch feel, dry and free from any dust, oil, and grease. This surface preparation provides for superior adhesion that minimizes the effects of hot and cold temperatures.



General Arrangement
Model HTC HighGuard,
Single-walled
Oil/Water Separator with
Gravity Discharge shown

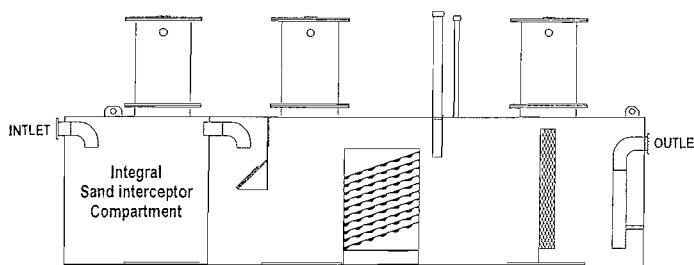


Design Options

Separator installations vary greatly with each location. Highland custom fabricates oil/water separators to satisfy your specific needs. The following information illustrates some of the influent and effluent/product handling options available.

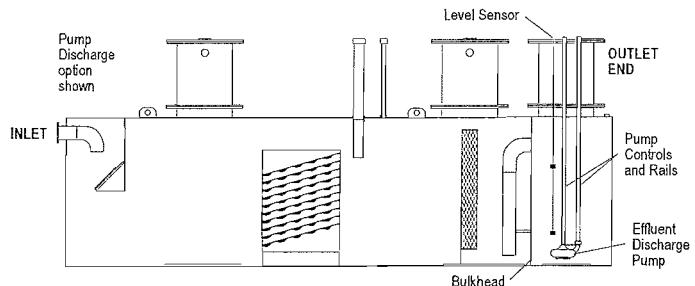
Series G

Series G oil/water separators feature an integral sand interceptor compartment to permit sand and gravel to settle out before the wastewater enters the oil/water separator.



Series J

Series J oil/water separators have an integral effluent pump-out chamber with level controls. The pumped effluent can be routed through Highland's Advanced Filtration System to further reduce the oil content.



Model HT or HTC	Flow Rate Gal/Min	Recommended Oil Pump Out Gallons	Total Volume Gallons	Inlet/ Outlet Diameter	Dimensions HT or HTC Length	Dimensions	
						Series G Length	Series J Length
350	35	70	350	4"	3'-6"	6'-0"	9'-9"
550	55	110	550	4"	3'-6"	7'-9"	10'-9"
1,000	100	200	1,000	6"	4'-0"	10'-9"	14'-0"
2,000	200	400	2,000	6"	5'-4"	12'-0"	15'-0"
3,000	300	600	3,000	8"	5'-4"	18'-0"	21'-4"
4,000	400	800	4,000	8"	5'-4"	24'-0"	28'-8"
5,000	500	1,000	5,000	8"	6'-0"	23'-10"	28'-8"
6,000	600	1,200	6,000	10"	6'-0"	28'-8"	34'-0"
7,000	700	1,400	7,000	10"	7'-0"	24'-4"	28'-8"
8,000	800	1,600	8,000	10"	7'-0"	28'-0"	33'-6"
9,000	900	1,800	9,000	12"	8'-0"	24'-0"	28'-8"
10,000	1,000	2,000	10,000	12"	8'-0"	26'-8"	32'-0"
12,000	1,200	2,400	12,000	12"	8'-0"	32'-0"	38'-9"
15,000	1,500	3,000	15,000	14"	10'-0"	25'-6"	32'-8"
20,000	2,000	4,000	20,000	16"	10'-6"	31'-0"	38'-9"
25,000	2,500	5,000	25,000	18"	10'-6"	38'-9"	46'-6"
30,000	3,000	6,000	30,000	20"	10'-6"	46'-6"	56'-2"
40,000	4,000	8,000	40,000	24"	12'-0"	47'-3"	56'-9"
50,000	5,000	10,000	50,000	24"	12'-0"	59'-6"	**
60,000	6,000	12,000	60,000	24"	13'-0"	60'-6"	**

Plate spacing and orientation may vary depending on site conditions. ** Contact Highland Tank for sizing information.

Please visit us at www.separatorsonline.com • www.hightank.com • Email us at wastewater@highlandtank.com



One Highland Road
Stoystown, PA 15563
814-893-5701
FAX 893-6126

4535 Elizabethtown Road
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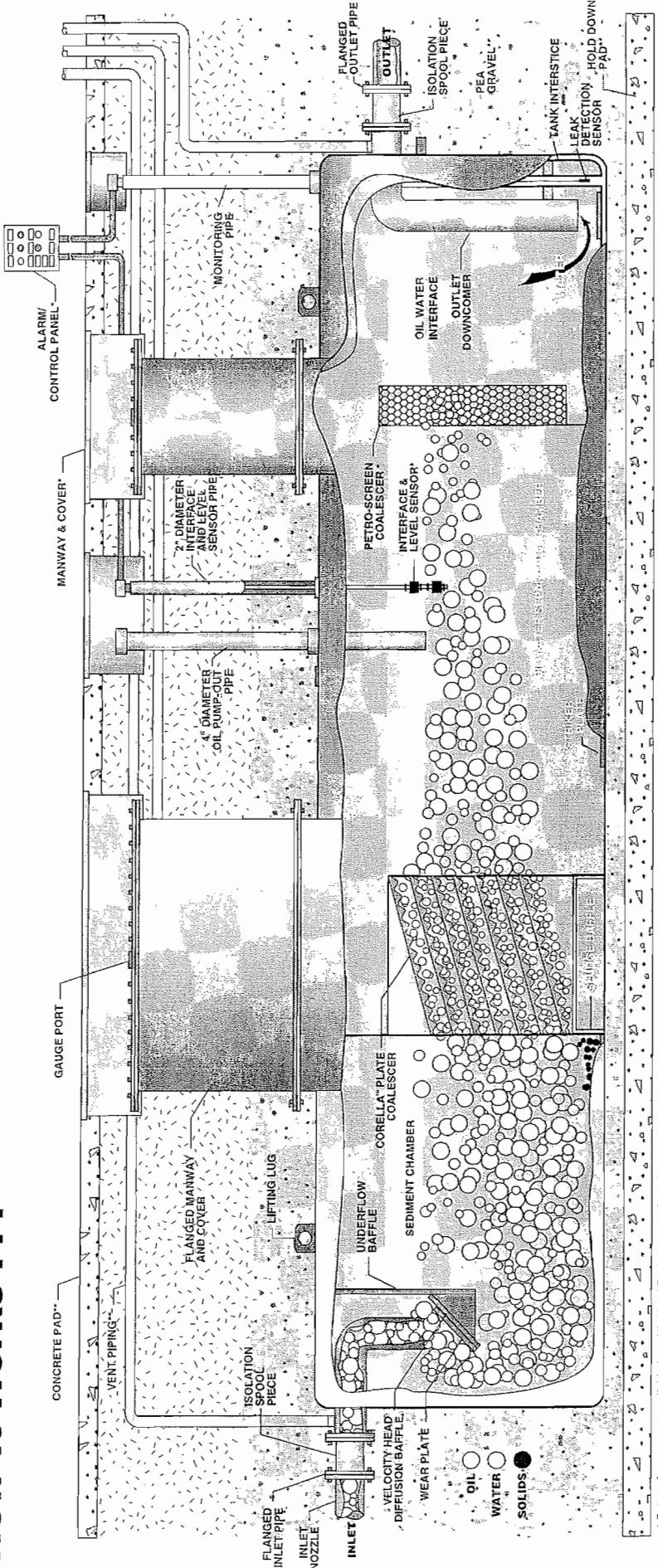
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FAX 218-1292

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814-443-6800
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How It Works . . .



Highland's Patented Design

Highland patented oil/water separators are stationary wastewater treatment vessels, filled with water. They contain specially designed internal baffles and coalescers to accelerate the separation process. The vessel is designed for unconfined access from above for inspection and maintenance.

Inlet flow is directed against the velocity head diffusion baffle to reduce flow turbulence and to distribute the flow evenly over the separator's cross sectional area. In the sediment chamber, heavy solids settle out and concentrated oil rises to the surface. The oily water then passes through the Corella® Coalescer, an inclined arrangement of stacked parallel flat and corrugated plates.

The corrugated underside of the Corella® plates causes the oil to coalesce into sheets. The oil globules then rise to the surface of the separation chamber, where the separated oil accumulates.

Any remaining solids sink to the top of the plates and slide off of the plates to the solids collection area. The effluent flows downward to the outlet and is discharged by gravity displacement.

To intercept droplets of oil too minute to be removed by the parallel flat/corrugated plates, we use a Petro-Screen polypropylene impingement coalescer (an encased bundle of layered oil-attracting fibers). Large EZ-Access

chambers allow for total, unconfined, unrestricted access from above to the removable Corella® and Petro-Screen coalescers for safe visual inspection, cleaning, and maintenance. Electronic oil level controls sound an alarm at high oil levels so that waste oil can be removed from the separator. Double-walled separators are monitored with electronic leak detection systems for the interstitial space.

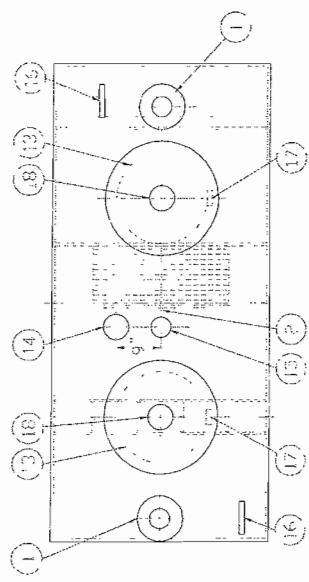
GENERAL SPECIFICATIONS

NO. REQ'D: 500
CAPACITY: 500 GALLONS
TYPE: OUTWARD BOUND
MATERIAL: VIT. CAPSON STAINLESS STEEL
FLOW RATE: 75 GPM
GAUGE: 1/4" N.P.T.
HEADS: PRE-
SHELL: 1/4" N.P.T.
SURFACE PRESSURE: NO. 300 STAINLESS STEEL
COATING: EPOXY
EXTERIOR: BIG-GUARD
INTERIOR: NONE
CONSTRUCTION: LADDER WALL AND EXTERIOR SEAMS
OPERATING PRESSURE: APPROVED
TESTS: 1.5 TIMES
MANUFACTURER: VIT. CAPSON INDUSTRIES, INC.
ADDRESS: 1000 W. 10TH ST., KANSAS CITY, MO. 64101

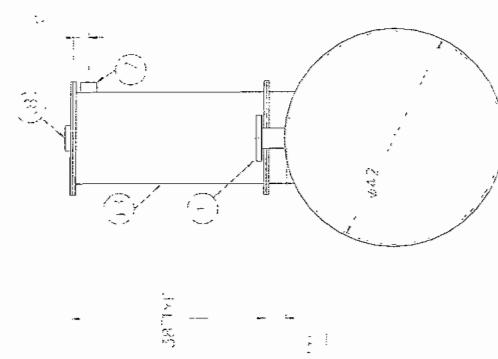
GENERAL APPROVAL OF THE STAINLESS STEEL PRODUCT
BY THE AMERICAN STAINLESS STEEL PROCESSORS' ASSOCIATION
AND THE AMERICAN IRON & STEEL INSTITUTE

APPROVED FOR USE AS A STAINLESS STEEL PRODUCT
BY THE AMERICAN IRON & STEEL INSTITUTE

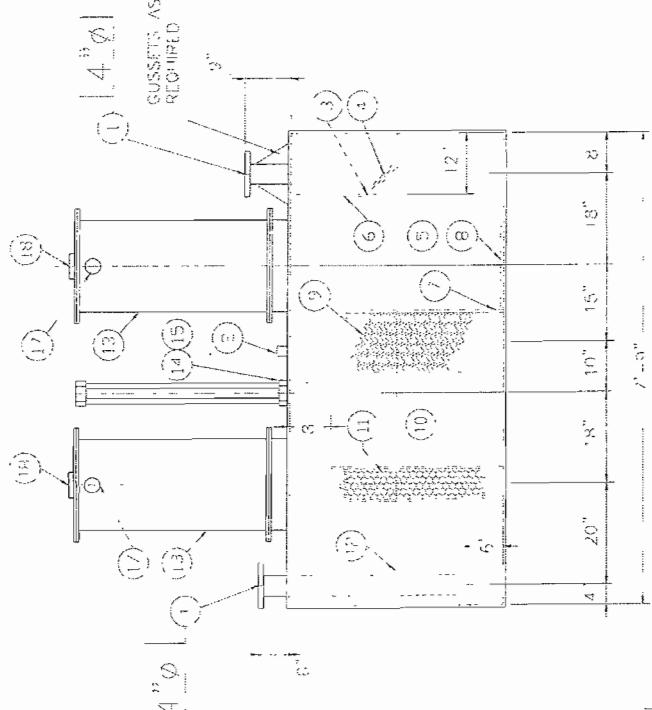
1. 150# R.F. CO. FLANGE
2. MONITOR LUGS
3. VELCRO HEAD DIFFUSION Baffle
4. WAR PLATE
5. CLODERT CHAMBER
6. UNDERFLOW Baffle
7. SUGAR Baffle
8. STRIKER PLATE
9. PARALLEL CORRODED STAINLESS STEEL
10. OIL/WATER SEPARATOR & HOLLOW & REINFORCED
11. 6" THICK COAT/SCRATCH RESISTANT
12. OUTLET DOWNCOMER
13. 18"Ø MANWAY WITH RG.1 CM LID DESIGN
14. 4"Ø RISER PIPE SUPPORT LOCATED
15. LIFTING LUGS
16. 2"Ø FTG. FOR VENT LINE, P.D. MASTERS
17. 2"Ø FTG. FOR GAUGES, WI. P.D. MASTERS
18. 4"Ø FTG. FOR VENT LINE, P.D. MASTERS



PLAN



END VIEW



ELEVATION

PROVIDED EQUIPMENT

- 1. 150# R.F. CO. FLANGE
- 2. MONITOR LUGS
- 3. VELCRO HEAD DIFFUSION Baffle
- 4. WAR PLATE
- 5. CLODERT CHAMBER
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- 18. 4"Ø FTG. FOR VENT LINE, P.D. MASTERS

REVISIONS

Highland Tank

U.S. Patent No. 2,929,661	Canadian Patent 1,029,661
550 Lb. LID LID WEIGHT	550 Lb. LID LID WEIGHT
STC, HIGH-GUARD, STAINLESS STEEL	STC, HIGH-GUARD, STAINLESS STEEL
CUSTOMER:	PROJECT:

1000 W. 10TH ST., KANSAS CITY, MO. 64101	1000 W. 10TH ST., KANSAS CITY, MO. 64101
1000 W. 10TH ST., KANSAS CITY, MO. 64101	1000 W. 10TH ST., KANSAS CITY, MO. 64101
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1000 W. 10TH ST., KANSAS CITY, MO. 64101	1000 W. 10TH ST., KANSAS CITY, MO. 64101

Highland Tank

Model HTC-550 UL-SU2215 Approved Oil/Water Separator with Corella™ Coalescer
Single-wall Construction with the HighGuard Protection System for underground installation.

Project Description: _____

Scope

The separator shall be designed for gravity separation of sand, grit, settleable solids, or semisolids, and free oils (hydrocarbons and other petroleum products) from wastewater associated with _____ operations. Separator shall be installed belowground with top access at or above grade level. The source of the influent to the separator shall be gravity flow from storm water runoff, hydrocarbon spills, and/or cleaning/maintenance operations.

Specifications

Provide and install _____ Highland Tank Model HTC-550 UL-SU2215 Belowground Single Wall Parallel Flat/Corrugated Plate Gravity Displacement Oil/Water Separator. Separator shall be furnished with oil level alarm system. Oil/Water Separator shall be 3'-6" in diameter and 7'-9" long; having a total volume of 550 gallons to comply with Spill Prevention Control and Countermeasures (SPCC) plan requirements at the facility. The sizing of this oil/water separator is consistent with industry protocols for complying with the minimum federal spill and discharge regulations therefore a separator of smaller volume is not permissible.

Separator to be furnished with a Corella™ inclined parallel flat/corrugated plate coalescer to simultaneously separate free oil droplets and settleable or suspended solids particles from water without clogging of the coalescer.

Performance

Influent Characteristics

Provide Separator designed for intermittent and variable flows of water, oil, or any combination of non-emulsified oil-water mixtures ranging from zero to 55 gal/min. Minimum separator retention time shall be 10 minutes. Operating temperatures of the influent oil in water mixture shall range from 40 degrees F. to 80 degrees F. The specific gravity of the oils at operating temperatures shall range from 0.71 to 0.92. The specific gravity of the fresh water at operating temperatures shall range from 1.00 to 1.03.

Effluent Characteristics

The free oil and grease concentration in the effluent from the separator shall not exceed 10 mg/l (10 PPM) to satisfy requirements of the NPDES stormwater discharge permit. To achieve this goal, it will be necessary to remove all free oil droplets equal to and greater than 20 microns.

Design Criteria

The separator shall be listed to Underwriter's Laboratories UL-SU2215. Construction and performance of the oil/water separators must be in accordance with UL-SU2215. Provide certification documentation detailing criteria under which the system was tested. UL-SU2215 label shall be prominently displayed on manway covers.

Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges; Design and Operation of Oil/Water Separators." Effective surface area calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document specified effluent quality based on complete removal of the specified oil globule at design flow. A separator with lower effective surface area than required is not permissible.

Separator capacities, dimensions, construction, and thickness shall be in strict accordance with Underwriters Laboratories, Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquids, September 30, 1997, Single Wall construction.

Separator Corrosion Control System shall be in strict accordance with Underwriters Laboratories Inc. Subject UL-1746 Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks and HighGuard® External Corrosion Protection Specifications.

Oil/water separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.

Separator vessel volume shall allow for a hydraulic retention time of ten (10) minutes to ensure laminar flow conditions which result in hydraulic uniformity and high effluent quality. Volume reduction will adversely affect separator performance by increasing horizontal velocity and turbulence, therefore a separator of smaller volume is not permissible.

Separator shall be the standard patented product of a steel tank manufacturer regularly engaged in the production of such equipment. Manufacturer shall have at least 20 years experience in manufacturing similar units for identical applications. No subcontracting of tank fabrication shall be permitted.

Separator shall be fabricated, inspected, and tested for leakage before shipment from the factory by manufacturer as a completely assembled vessel ready for installation.

Separator shall be cylindrical, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The oil/water separator's dimensions and thickness shall be in strict compliance with Roark's Formulas for Stress and Strain as presented in UL 58, September 30, 1997. Calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document structural strength under specified overbearing or external pressure. A separator with a reduced shell thickness is not permissible.

Separator shall have an oil storage capacity equal to about 43% of the total vessel volume and an emergency oil spill capacity equal to 80% of the total vessel volume.

To prevent extensive shutdown and maintenance, the separator's coalescer design must allow solids to fall unhindered by turbulence, and oil droplets to rise without risk of re-emulsifying due to collisions with interfering solids. The use of plastic perforated tubes, spherical balls, or irregular shaped media will increase the facility's maintenance costs and shall not be permitted.

Separator shall consist of inlet and outlet connections, non-clogging flow distributor and energy dissipater device, stationary under flow baffle, presettling chamber for solids, sludge baffle, oil coalescing chamber with removable parallel flat/corrugated plate coalescer, with removable plates, and sectionalized removable polypropylene impingement coalescers to optimize separation of free oil from water, effluent downcomer positioned to prevent discharge of free oil that has been separated from the water, access ways for coalescers and each chamber, fittings for vent, oil pump-out, sampling, gauging, and lifting lugs.

Description

Separator shall be standard prefabricated inclined parallel flat/corrugated plate, gravity displacement type unit.

Separator shall be cylindrical with capacities, dimensions, construction, and thickness in strict accordance with Underwriters Laboratories Subject 58, Single Wall construction using flat-flanged heads. Separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.

The separator shall be a pre-packaged, pre-engineered, ready to install unit consisting of:

A 4" flanged inlet connection at the inlet end of the separator. Inlet nozzle discharge is located at the furthest diagonal point from the effluent discharge opening.

A velocity head diffusion baffle at the inlet to:

Reduce horizontal velocity and flow turbulence,
Distribute the flow equally over the separators cross sectional area,
Direct the flow in a serpentine path in order to enhance hydraulic characteristics and fully utilize all separator volume, and
Completely isolate all inlet turbulence from the separation chamber.

A sediment chamber to disperse flow and collect oily solids and sediments.

A sludge baffle to retain settleable solids and sediment and prevent them from entering the separation chamber.

An Oil/Water Separation Chamber containing a removable Corella™ inclined parallel flat/corrugated plate coalescer. The coalescer shall have individual removable plates, sloped towards the sediment chamber. Each coalescing plate shall be flat on the top and corrugated on the bottom. The flat top plate shall resist clogging and clotting with solids. The corrugations of each of the plate bottoms shall be shaped and positioned to enhance collisions between the rising oil droplets and coalescence between them thereby improving separator efficiency. The coalescer shall:

Effect separation of oil and solids from all strata of the wastewater stream.

Shorten the vertical distance that an oil globule or solid particle has to raise or sink, respectively, for effective removal. The minimum plate gap shall be 3/4".

Enhance coalescence and agglomeration by causing the smaller globules and particles (those possessing smaller rising/settling rates) to coalesce and collect on the plates thereby forming larger globules and particles that separate rapidly in water.

Direct the flow paths of the separated oil to the surface of the separator and separated solids to the bottom of the separator.

Allow solids to fall unhindered by turbulence, and oil droplets to rise without risk of re-emulsifying due to collisions with interfering solids.

The Oil/Water Separation Chamber shall also contain a sectionalized removable "Petro-Screen™" polypropylene impingement coalescer designed to intercept oil globules of less than 20 microns in diameter. Heavy, one-piece impingement coalescers are not permissible.

An internal effluent downcomer at the outlet end of the separator, to allow for discharge from the bottom of the separation chamber only.

A 4" flanged effluent connection at the outlet end of the separator.

Fittings for vent, interface/level sensor, and waste oil pump-out, sampling, and gauge.

Two (2) _____ diameter manholes, UL approved, complete with _____ extension, cover, gasket, and bolts. One manway shall be placed between the inlet and the parallel flat/corrugated plate coalescer to facilitate access into sediment chamber for solids removal. One manway shall be placed between the parallel flat/corrugated plate coalescer and outlet to facilitate access into the oil/water separation chamber for oil removal.

Lifting lugs installed at balancing points for handling and installation.

Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.

HighGuard Corrosion Protection System consisting of:

- Isolation Spool Pieces
- Dielectric Isolation Gaskets and Bushings
- External surfaces commercial grit-blasted, coated 75 mils DFT Self-Reinforcing Polyurethane.

Internal surfaces commercial grit blast and coated with 10 mils DFT heavy duty Polyurethane.

Accessories

Separator shall be supplied with an audible and visual alarm system that indicates hi oil level (visual only) and hi-hi oil level (audible and visual) of oil storage in the oil/water separator will be provided. A silence control shall be provided for the audible alarms. Level sensor(s) to be intrinsically safe. Level sensor floats to be made of stainless steel. The control panel shall be NEMA 4. Power to the control panel is to be []volt, [] phase.

Separator shall be supplied with Polyester Hold-down straps.

Separator shall be supplied with prefabricated Concrete Deadman Anchors.

Separator shall be supplied with cylindrical and/or rectangular steel Grade Level Manways designed to AASHTO H20 requirements.

Quality Assurance

Submittals:

Shop Drawings: shop drawings for oil water separators shall show principal dimensions and location of all fittings.

Instructions: provide three complete sets of installation, operation, and maintenance instructions with separator.

Quality Control: Quality control, inspection procedures, and reports shall be considered part of the submittal package.

There shall be a limit to the number of submittals for the specified separator. If the separator is not "Approved" or "Approved as Noted" on the second submittal for approval, the engineer reserves the right to refuse further submittals from the same manufacturer and may require the contractor to submit for approval a different manufacturer's product.

Warranty:

The manufacturer shall warrant its products to be free from defects in material and workmanship for a period of one year from the date of shipment. The warranty shall be limited to repair or replacement of the defective part(s).

Highland Tank HighGuard warranty shall be standard limited warranty in effect at time of purchase.

Approved Manufacturers

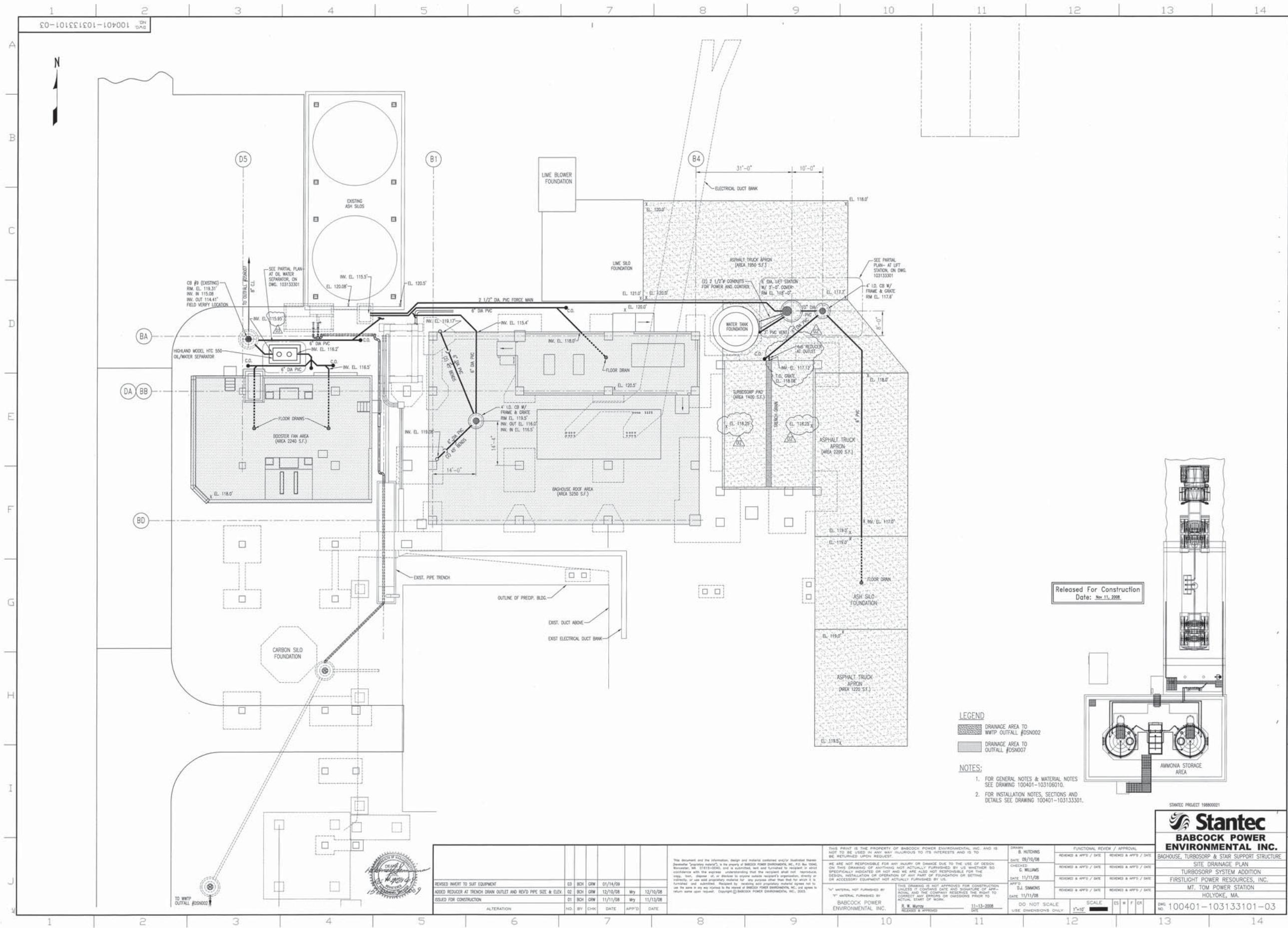
Highland Tank and Mfg. Co., One Highland Road, Box 338, Stoystown, PA 15563

Phone (814) 893-5701, Facsimile (814)-893-6126,

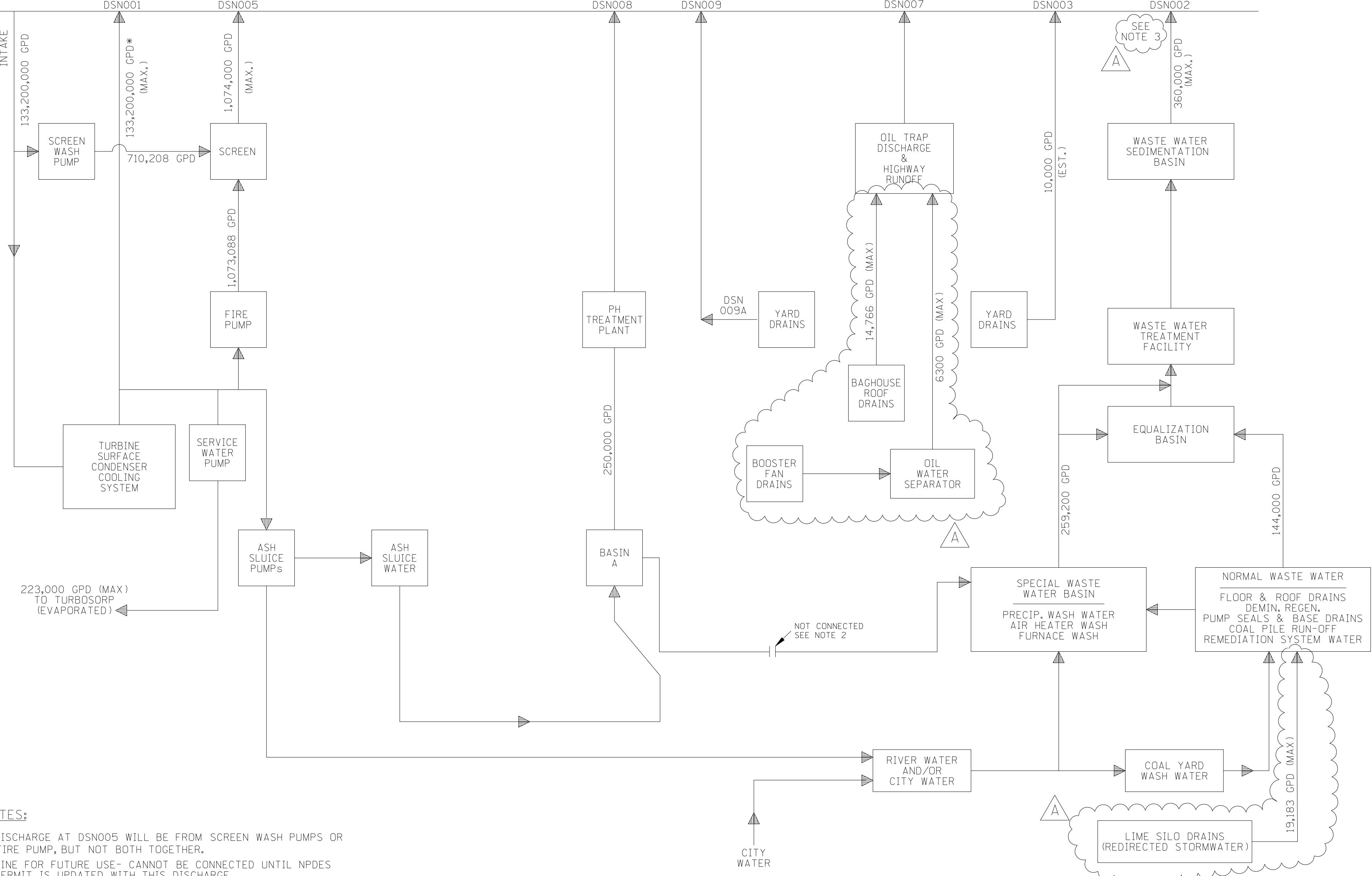
E-Mail ows.info@highlandtank.com,

Highland Tank shall manufacture the Oil/Water Separator.

<http://www.highlandtank.com>



CONNECTICUT RIVER



- * FLOW WHEN FIRE PUMP, REFLECTING POOL AND ASH SLUICE PUMPS ARE OUT OF SERVICE.
- * * FLOW OF 250,00 GPD WILL BE FROM DSN008 OR DSN005, NOT BOTH TOGETHER

REVISIONS DURING CONSTRUCTION				P.A. 07-031			
FirstLight™ Power Resources FOR MOUNT TOM GENERATING Co.,LLC TITLE MT TOM STATION NPDES PERMIT MA000 5339 WATER BALANCE DIAGRAM 2013							
BY JRS	CHKD. JM	APP.	APP.	DATE 2-28-13	DATE 2-28-13	DATE	DATE
SCALE NONE	DWG. NO.	43719-95003A		P.A. *	43719-95003A	43719-95003A	43719-95003A
MF	P.A. *	NO.	DATE	REVISIONS	BY CHK APP APP	43719-95003A	43719-95003A

MT. TOM STATION – CHLORINATION OF COOLING WATER SYSTEM

Description of chlorination system:

Mt Tom Station uses 12.5% (nominal) sodium hypochlorite which is stored in a 1500-gallon poly tank adjacent to the switchyard on the south side. The pipeline from the tank leads into the facility down the level 113 (basement level) where the chlorination pumps are installed. The pump(s) are operated on timers which are activated only when there is cooling water flowing through the condenser.

Chlorine is injected at the outlet pipe of the circulating water pumps, valved to inject in either or both running pumps. The chlorine pumps are at basement elev. 113 in the southeast corner outside the ash sluice pump room.

Frequency of treatment:

Chlorine is applied 8 times daily for 15 minutes when the cooling water system is operating. The Permit limits this to a total of 2 hours. During colder water seasons this duration can be reduced (to 10 minutes instead of 15 minutes) if indicated by higher residual chlorine readings.

Testing procedure:

Testing is by EPA Method 330.5 (DPD colorimetric). It is required to be done at least once per week when cooling water is in use as dictated by permit. Water is drawn from the discharge pipe after the condenser, normally taken at the ash hopper seal pump in the Fire Pump room.

- 15-minute cycle – Samples are typically taken at 8, 14 and 20 minutes into the cycle. These sample points have demonstrated a good range of results to yield a maximum reading and confirmation of the cycle ending.
- 10-minute cycle – Samples are typically taken at 5, 10 and 15 minutes into the cycle. Similarly the maximum and cycle end readings are confirmed.
- Testing of the samples is done at the WWTP immediately after collecting all samples. The pH measurements are also done at this time. Readings and sampling information are entered in the WWTP laboratory logbook.
- Hypochlorite pump rate should be turned down if maximum value goes over 0.10 mg/L (permit ***limit is a daily maximum of 0.15 mg/L*** above which a violation would have to be reported immediately).

Reporting:

Reporting of chlorination levels is done on the monthly DMR under DSN-001 for both average and maximum values of total residual chlorine. Limits for both are 0.15 mg/L.



Mt. Tom Station
 200 Northampton Street
 Holyoke, MA 01040
 Ph: (413) 536-9562
 Fax: (413) 536-9513
 Email: mike.gwyther@gdfsuezna.com

Michael Gwyther
Plant Manager

February 28, 2011

PRMT0003c

MassDEP
 One Winter Street, 5th Floor
 Boston, MA 02108
 Attn: Water Management Program

References: 1. Letter (E00143) dated December 31, 2007 from G. Haas to D. Brown - Water Management Act Registration #10613712 for 2008-2017.

Dear Sir/Madam:

Mt. Tom Station - WMA Reg. # 10613712
Comparison of Hour-Meter to McCrometer Meter Flow Calculations

Mt. Tom Generating Company, LLC (Mt. Tom) received the above noted Water Management Act Registration on December 31, 2007. As part of the conditions of the registration, Mt. Tom was required to install meters on the cooling water lines which withdraw from the Connecticut River. MA DEP further required Mt. Tom to submit two years of comparison data weighing the hour-meter calculations, used for a number of years to estimate flow through the power plant, to the meter readings derived from the McCrometer meters installed.

Three meters were installed in July 2008 as confirmed to the WMA office at the Western Region Office on July 24, 2008 via email. Separate meters were installed on each of the large cooling water lines at the discharge of the pumps. One more meter was installed on the common discharge header of the River Water Cooling pumps used in a closed system to cool bearing water.

Chronology of meter installations and calibration:

- July 2008 - Three (3) McCrometer Model 282L flow meters were installed and calibrated.
- Daily meter readings were taken during the entire years of 2009 and 2010.
- Cooling water pump No.1 seemed to be unreliable and had to be inserted in another location. Due to running times, this could not be done until April 2010.
- June 2010 - Meters recalibrated by McCrometer representative after cooling water pump no.1 was repositioned.

Evaluation and comparison of readings:

- The hour meters have been used in conjunction with pump capacity curves for years to estimate flow through the condenser. This flow is reported on the monthly NPDES Discharge Monitoring Reports as well as in the Water Management Act Annual Reports of Water Withdrawal.
- The circulating water (cooling water) pumps have been installed and operating in the plant with no major maintenance since 1960. It is expected that pump capacity would have reduced due to opened clearances and general wear and tear on the pump internals. Therefore, actual cooling water flow would likely be less than the pump curves would indicate.
- The attached table (Attachment 1) comparing the flows indicated by the meters to the baseline of hour meter calculations are expected to indicate some percentage of under-registered flow due to the aging of the pumps.

Conclusions:

1. The meters do not seem to correlate well with the hour-meter calculations. The hour meter calculations should give a conservatively high number thus resulting in the meter readings indicating some degree of under-registering the flow rates. While under-registration dominates the compared numbers, particularly in the latter half of 2010, consistency and accuracy do not appear evident.
2. The river water pump data presented a much better comparison to hour-meter calculations. This may be due to a better geometrical configuration. The meter in the river water line, a much smaller diameter pipeline, is located after a reasonable stretch of straight pipe (see Fig. 4 of Attachment 2)thus allowing better linearly settled flow.
3. The inaccuracy and difficulty in obtaining consistency with the cooling water pump meters is likely attributable to the very short length of pipeline available. See Figures 2 and 3 of Attachment 2.

If you have any questions regarding this submittal, please call Mr. James M. Merchant, FirstLight Power Resources Services, LLC, (860) 895-6934, or me at Mt. Tom, (413) 536-9562.

Very truly yours,

FIRSTLIGHT POWER RESOURCES SERVICES, LLC
on behalf of MT. TOM GENERATING COMPANY, LLC


Michael Gwyther

Cc: Mr. James Bumgardner
MA DEP - WERO
436 Dwight Street
Springfield, MA 01103

ATTACHMENT 1

MT. TOM STATION - WATER MANAGEMENT ACT REGISTRATION NO. 10613712 - 2-YEAR METER COMPARISON

2009		CONDENSER COOLING WATER PUMPS			RIVER WATER PUMPS		
		McCROMETER FLOW	HOUR METER	McCr/HourMtr over/under registered	McCROMETER FLOW	HOUR METER	McCr/HourMtr over/under registered
JAN	Circ.1	1,490,113,000	2,009,070,000	-25.8%	86,617,940	111,620,000	-22.4%
	Circ.2	-	-				
FEB	Circ.1	2,966,653,000	1,682,640,000	76.3%	80,355,117	95,610,000	-16.0%
	Circ.2	30,595,000	41,850,000	-26.9%			
MAR	Circ.1	1,228,469,000	618,030,000	98.8%	80,504,944	96,790,000	-16.8%
	Circ.2	629,020,000	1,132,920,000	-44.5%			
APR	Circ.1	145,748,000	103,410,000	40.9%	82,351,211	108,060,000	-23.8%
	Circ.2	1,015,273,000	1,924,020,000	-47.2%			
MAY	Circ.1	854,119,000	314,820,000	171.3%	18,637,313	16,160,000	15.3%
	Circ.2	73,162,000	89,910,000	-18.6%			
JUN	Circ.1	587,124,000	562,140,000	4.4%	90,067,172	81,060,000	11.1%
	Circ.2	958,965,000	1,455,300,000	-34.1%			
JUL	Circ.1	1,302,301,000	1,821,150,000	-28.5%	121,274,067	103,520,000	17.2%
	Circ.2	729,775,000	995,490,000	-26.7%			
AUG	Circ.1	737,672,000	862,110,000	-14.4%	96,543,244	93,360,000	3.4%
	Circ.2	1,074,291,000	1,618,110,000	-33.6%			
SEP	Circ.1	55,080,000	27,000,000	104.0%	7,590,367	6,770,000	12.1%
	Circ.2	18,988,000	26,730,000	-29.0%			
OCT	Circ.1	27,657,000	9,180,000	201.3%	3,262,046	2,690,000	21.3%
	Circ.2	7,000	-				
NOV	Circ.1	13,702,000	937,980,000	-98.5%	20,548,255	57,180,000	-64.1%
	Circ.2	117,521,000	104,760,000	12.2%			
DEC	Circ.1	515,900,000	31,860,000	1519.3%	51,093,053	100,440,000	-49.1%
	Circ.2	855,377,000	1,785,780,000	-52.1%			
TOTALS	Circ.1	9,924,538,000	8,979,390,000	10.5%			
	Circ.2	5,502,974,000	9,174,870,000	-40.0%			
	Combined	15,427,512,000	18,154,260,000	-15.0%	738,844,729	873,260,000	-15.4%

2010		CONDENSER COOLING WATER PUMPS			RIVER WATER PUMPS		
		McCROMETER FLOW	HOUR METER	McCr/HourMtr over/under registered	McCROMETER FLOW	HOUR METER	McCr/HourMtr over/under registered
JAN	Circ.1	4,626,674,000	1,566,270,000	195.4%	59,392,098	84,590,000	-29.8%
	Circ.2	2,046,000	3,780,000	-45.9%			
FEB	Circ.1	140,425,000	40,500,000	246.7%	73,048,799	100,710,000	-27.5%
	Circ.2	1,098,304,000	1,772,550,000	-38.0%			
MAR	Circ.1	12,356,000	829,440,000	-98.5%	34,515,904	49,320,000	-30.0%
	Circ.2	16,000	1,804,410,000	-100.0%			
APR	Circ.1	7,890,000	26,730,000	-70.5%	4,119,876	4,140,000	-0.5%
	Circ.2	5,668,000	7,560,000	-25.0%			
MAY	Circ.1	1,332,110,000 ①	1,035,990,000	28.6%	51,193,052	56,630,000	-9.6%
	Circ.2	504,042,000	654,750,000	-23.0%			
JUN	Circ.1	6,422,960,000 ②	1,209,330,000	431.1%	56,635,522	105,810,000	-46.5%
	Circ.2	1,226,127,000	1,928,340,000	-36.4%			
JUL	Circ.1	614,178,000	1,136,430,000	-46.0%	104,751,146	130,140,000	-19.5%
	Circ.2	745,407,000	986,040,000	-24.4%			
AUG	Circ.1	487,037,000	814,320,000	-40.2%	110,820,927	113,610,000	-2.5%
	Circ.2	913,703,000	1,602,990,000	-43.0%			
SEP	Circ.1	938,675,000	1,381,860,000	-32.1%	76,529,760	85,200,000	-10.2%
	Circ.2	743,336,000	968,220,000	-23.2%			
OCT	Circ.1	1,338,000	1,350,000	-0.9%	38,557,469	25,800,000	49.4%
	Circ.2	200,376,000	379,890,000	-47.3%			
NOV	Circ.1	751,164,000	916,650,000	-18.1%	159,180,293	51,650,000	208.2%
	Circ.2	24,496,000	39,690,000	-38.3%			
DEC	Circ.1	8,576,000	7,830,000	9.5%	97,995,481	76,520,000	28.1%
	Circ.2	590,787,000	1,379,430,000	-57.2%			
TOTALS	Circ.1	15,343,383,000	8,966,700,000	71.1%			
	Circ.2	6,054,308,000	11,527,650,000	-47.5%			
	Combined	21,397,691,000	20,494,350,000	4.4%	866,740,327	884,120,000	-2.0%

(1) McCrometer meter on cooling water pump no.1 was repositioned for better reliability.

(2) Meters recalibrated by McCrometer representative.

**MT. TOM STATION - WATER MANAGEMENT ACT REGISTRATION NO. 10613712
2-YEAR METER COMPARISON**



Figure 1 – McCrometer meter installation electronics.



Figure 2 – Circulating pump no.2 meter primary measuring element shown inserted in the pipeline.



Figure 3 – Photo shows both the north (circ. No.2_ line at the top and the circ. No.1 at the bottom).
Pumps are at the right just behind the structural steel column showing and the concrete intake tunnel at the left adjacent to the pipe flange.



Figure 4 – This photo shows the primary measuring element for the common header of the river water cooling pumps.

MT. TOM STATION DESCRIPTION

Mt. Tom Station (Mt. Tom Generating Company, LLC) is a pulverized coal-fired electric generating station situated at 200 Northampton Street (state Route 5) in the city of Holyoke, Massachusetts 01040. The facility, operating since 1960, is operated by FirstLight Power Resources Services, LLC, a subsidiary of GDF Suez Energy North America. The facility is a single unit, fossil fuel fired, steam electric generating station, with a net generating capacity of approximately 145 megawatts. Coal is the primary fuel with light fuel oil being used for ignition purposes. The facility has a coal pile capable of housing an inventory of up to 150,000 tons of coal.

Mt. Tom Station is located on the west bank of the Connecticut River from which it draws water for cooling purposes. The two cooling water pumps are single-speed pumps rated at 45,000 gpm each. The facility chlorinates the cooling water for the once through steam condenser to prevent bio-fouling of the heat transfer surfaces. Sodium hypochlorite is used as the source of chlorine for this process. Once the water has passed through the condenser, it is discharged to the Connecticut River.

The Mt. Tom Station operates a wastewater treatment system to treat all process wastewater from the station. Sulfuric Acid and Sodium Hydroxide are used in the system for pH adjustment and neutralization treatment. Treated water is discharged to the Connecticut River after a double-lined polishing basin. Bottom ash from the boiler system is also sluiced and treated for pH adjustment and flowed through another settling basin before discharging to the Connecticut River.

In 2006 the Station was fitted with a Selective Catalytic Reduction (SCR) system to control the emission of nitrogen oxides from the exit gases. Later, in 2009, Mt. Tom Station installed and activated a Turbosorp™ system, designed to reduce SO₂ and Mercury emissions, permitted to use hydrated lime, powdered activated carbon (PAC), brominated powder activated carbon (B-PAC). The system also reduces the hydrochloric acid, hydrofluoric acid and sulfuric acid byproducts of combustion.